# IoT Based Safety Band Using GSM and GPS

## Group No. 12

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# 1. Introduction

- Women Safety in India is widely discussed everywhere nowadays. It has now become a major issue, The crime rate is on the spike.
- Considering the situation, we have designed a system through which a woman will be able to receive administrative assistance in a very short time.
- We used a band as hardware and a mobile application as software, Hardware and software are connected to each other via Bluetooth.
- Our system helps the women when are involved in sexual harassment and is also made to help the victim when they come across an accident or any other crisis by tracking and sending their real time location to the police via SMS using GSM module and GPS module when the user not online.
- Our system helps them to store the coordinates of the place where the push button was pressed. All the data will be saved on firebase and will do data analysis and report it to police/government officials.

## 2. Objectives

1. To achieve the location of the victim we will be using the GPS and GSM module which will help their family to locate them.

2. To send SMS's free of cost we will use the SMS gateway API.

3. To achieve the current location it will be converted into a Google Map URL link and send through cross platform application to the concerned one.

4. To analyse the data/logs received from all the users so that it can be further used by police to identify the areas where emergencies had occurred with the help of bluetooth module which will send the data to the application and stored into the firebase.

# 3. Problem Definition

- **Problem Identified:**
  - ➢ The free movement of women are being hampered by sexual abuse. In the present world, sexual harassment is one of the major obstacles to women's empowerment.
  - ➢ The person who is in unmovable situation due to an accident or alone who needs help.

- Solution Proposed:
  - ➢ We proposed to make an app that helps the women to reach her family with single a click whenever she is in trouble.
  - ➢ We are also planning to create a system so, whenever a person meets with an accident can contact the concerned authority by a single click hereby sending his/her location to the police.

# 4.Technological Stack

## Hardware:

1. Arduino nano: approx. 300/- rupees
2. GSM/GPRS/Bluetooth 2g module : approx. 1900/- rupees
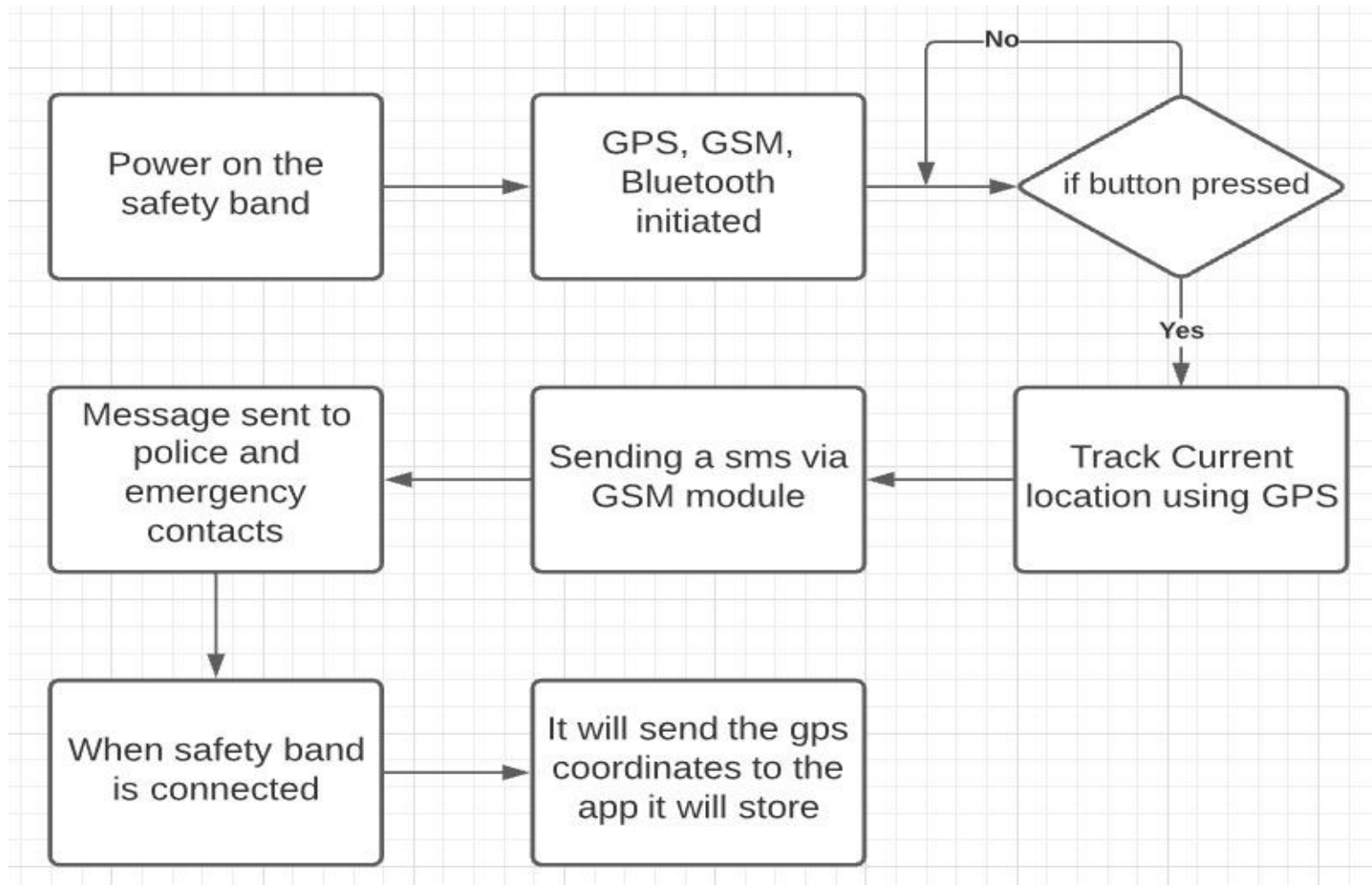3. Push Button : 70/-rupees

## Software:

1. Firebase
2. Flutter
3. Arduino IDE
4. Android studio
5. XCode

# 5. Review Suggestions

➢ Verification if the button pressed(if the button is pressed twice then only the message will be send)

➢ SMS gateway(by using SMS gateway API we can send SMS free of cost)

➢ Data analytics through data received at admin side(The data which is stored on Firebase will be converted into csv file after that we will do data analysis on the same data)

➢ Government aspect(after converting it to a csv file we will pass it on to the government officials so that they can improve the security if needed)

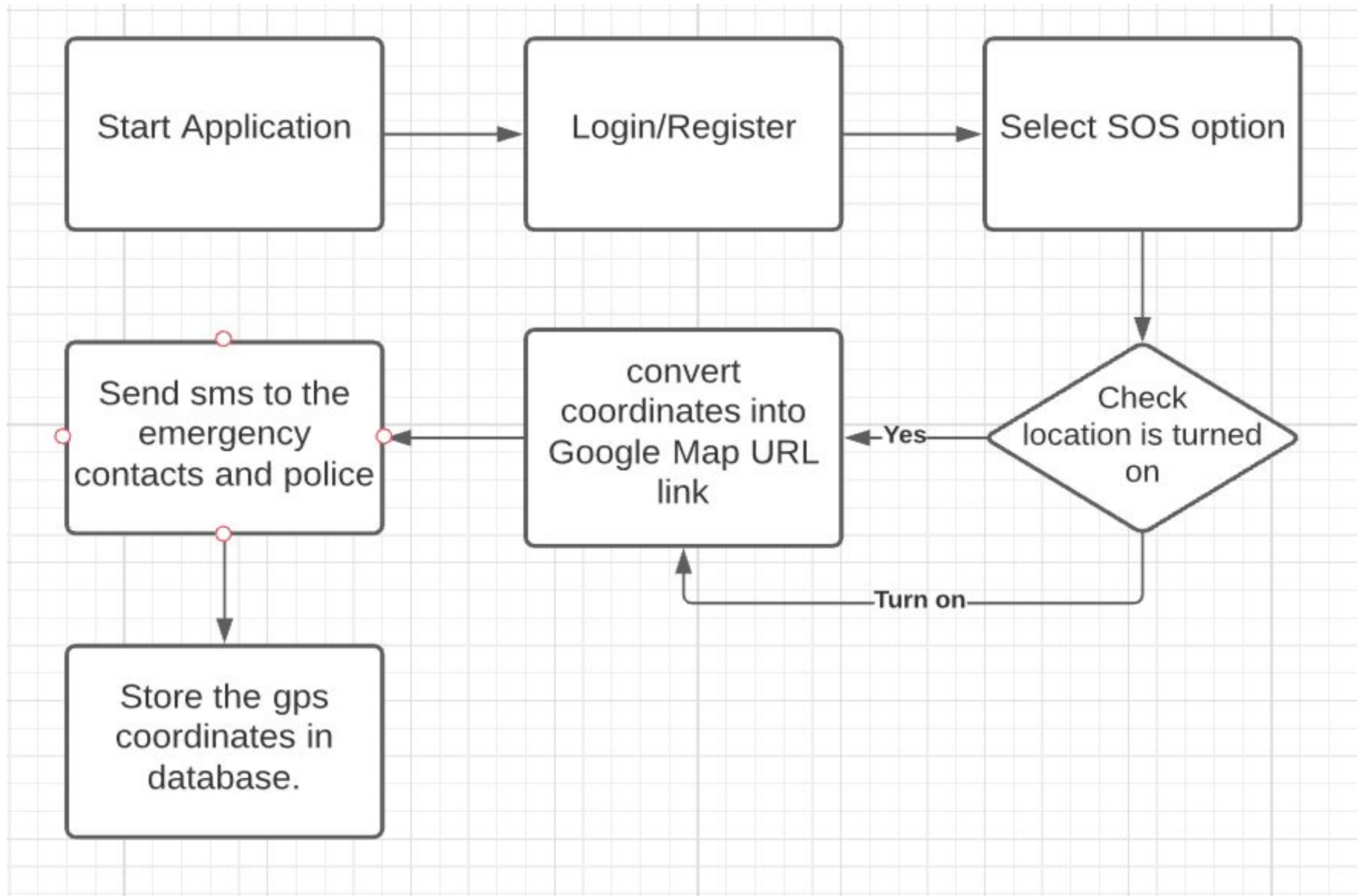➢ Cross platforming(we are creating the platform independent application by using Flutter)

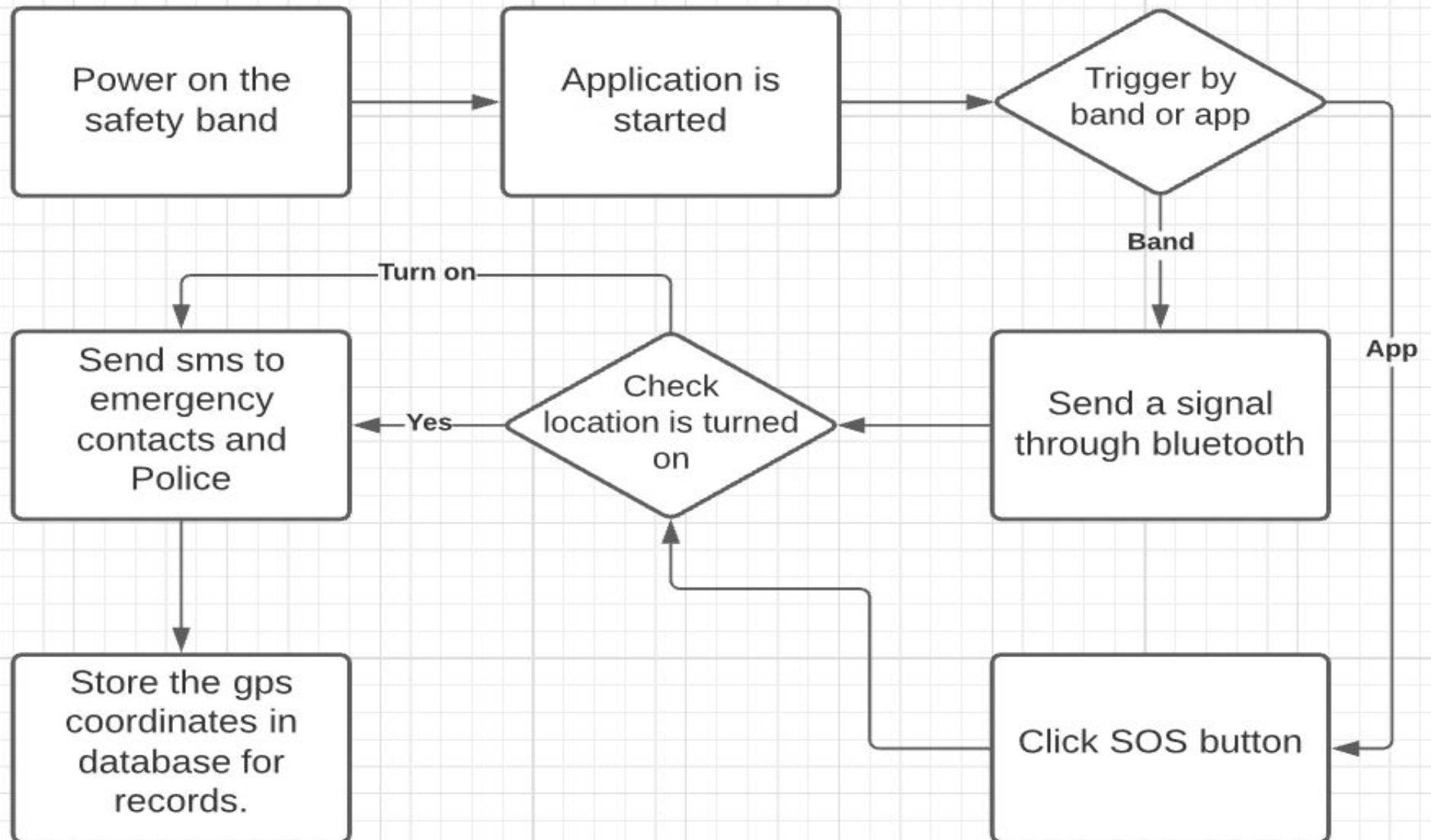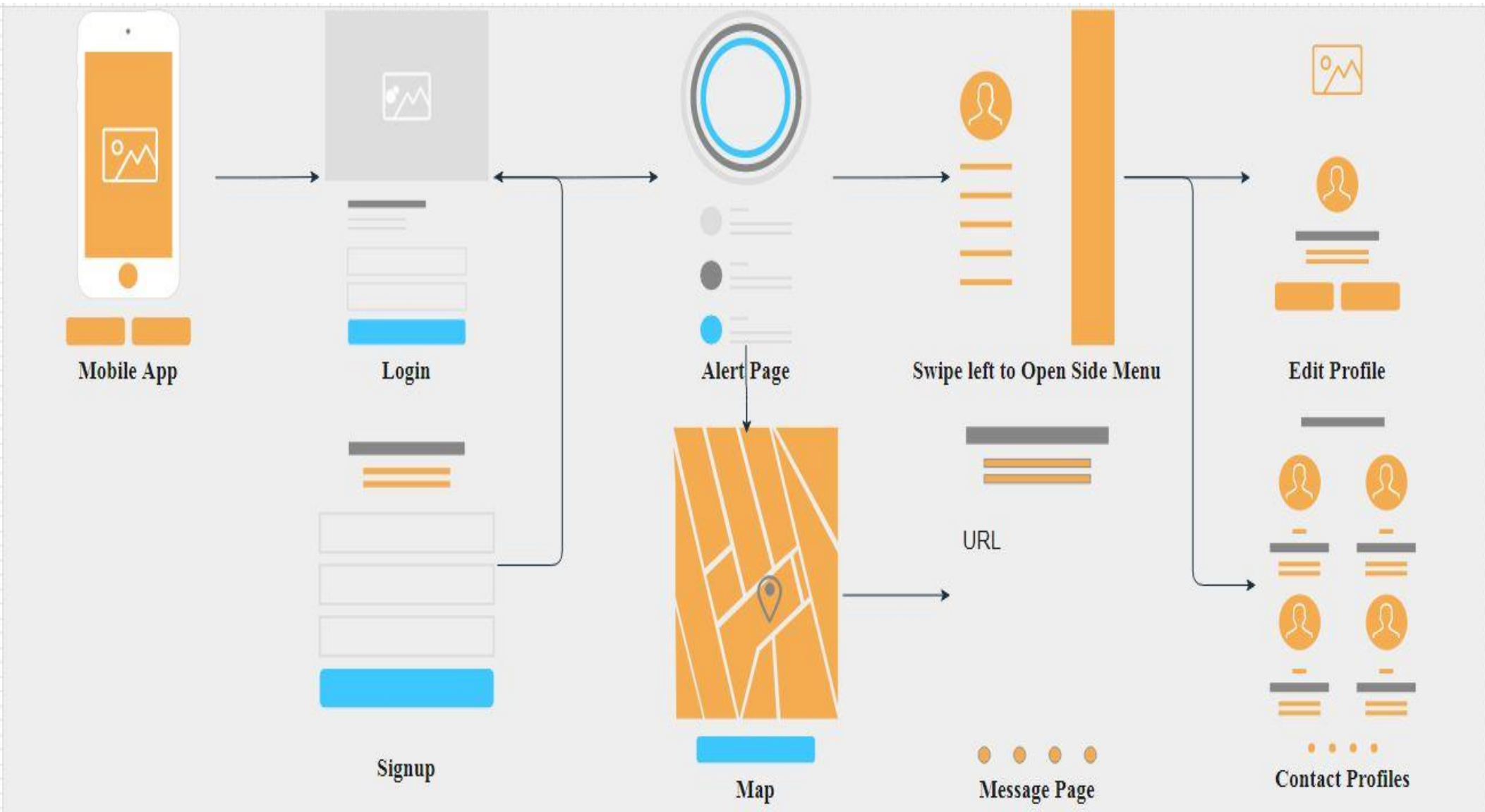# 6. Proposed System Architecture/Working

Block Diagram for Safety Band:

# Block Diagram for App:

```
┌──────────────────┐      ┌──────────────────┐      ┌──────────────────┐
│                  │      │                  │      │                  │
│ Start Application│─────▶│  Login/Register  │─────▶│ Select SOS option│
│                  │      │                  │      │                  │
└──────────────────┘      └──────────────────┘      └────────┬─────────┘
                                                             │
                                                             ▼
┌──────────────────┐      ┌──────────────────┐         ╱◇◇◇◇◇◇◇◇╲
│                  │      │     convert      │        ╱   Check    ╲
│ Send sms to the  │      │ coordinates into │◀─Yes──◁ location is  ▷
│   emergency      │◀─────│ Google Map URL   │        ╲  turned     ╱
│contacts and police      │      link        │         ╲   on     ╱
└────────┬─────────┘      └────────▲─────────┘          ╲◇◇◇◇◇◇╱
         │                         │                        │
         ▼                         └────────Turn on─────────┘
┌──────────────────┐
│  Store the gps   │
│  coordinates in  │
│    database.     │
└──────────────────┘
```

# Block Diagram for Safety Band and App:

# 7. Prototype Design Demonstration



Mobile App

Login

Alert Page

Swipe left to Open Side Menu

Edit Profile

Signup

Map

URL

Message Page

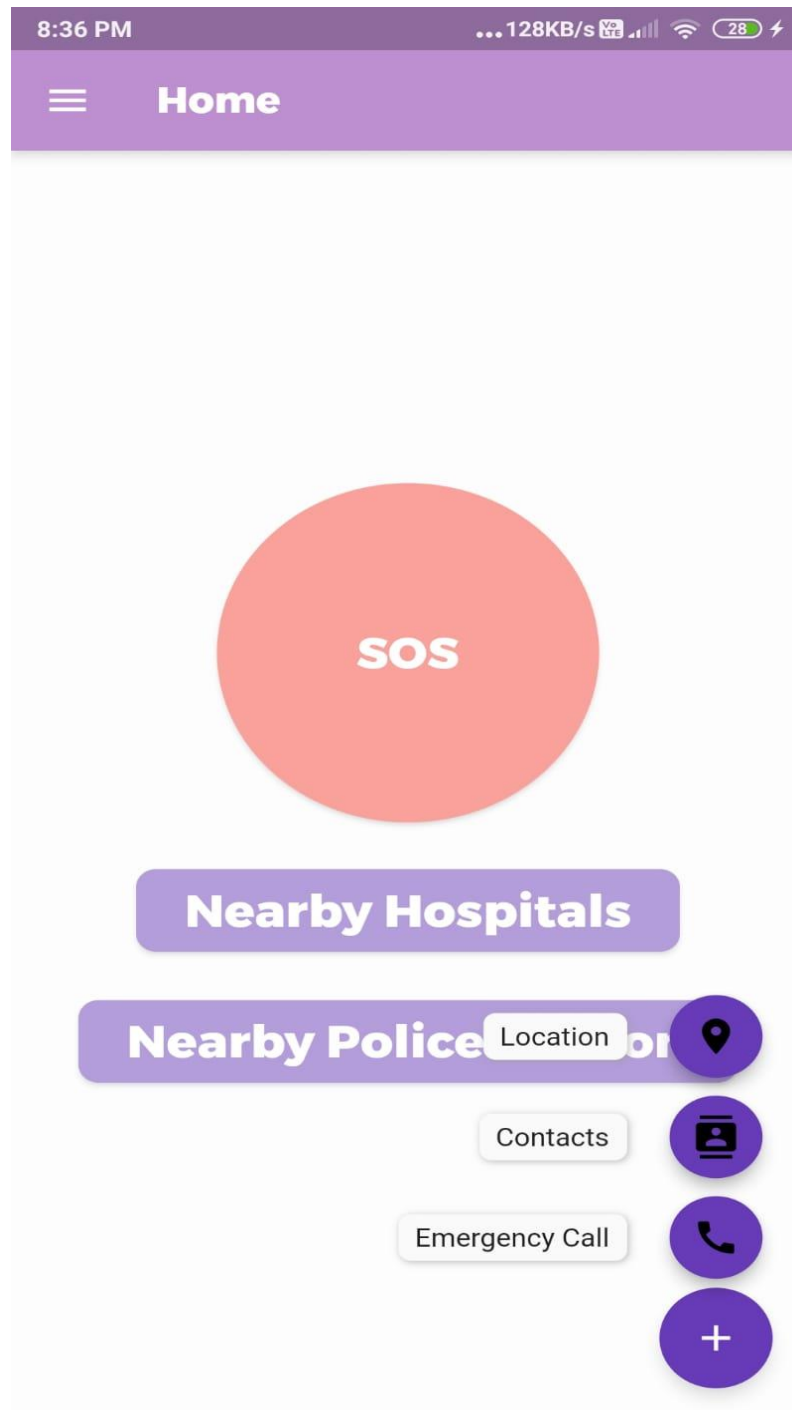Contact Profiles
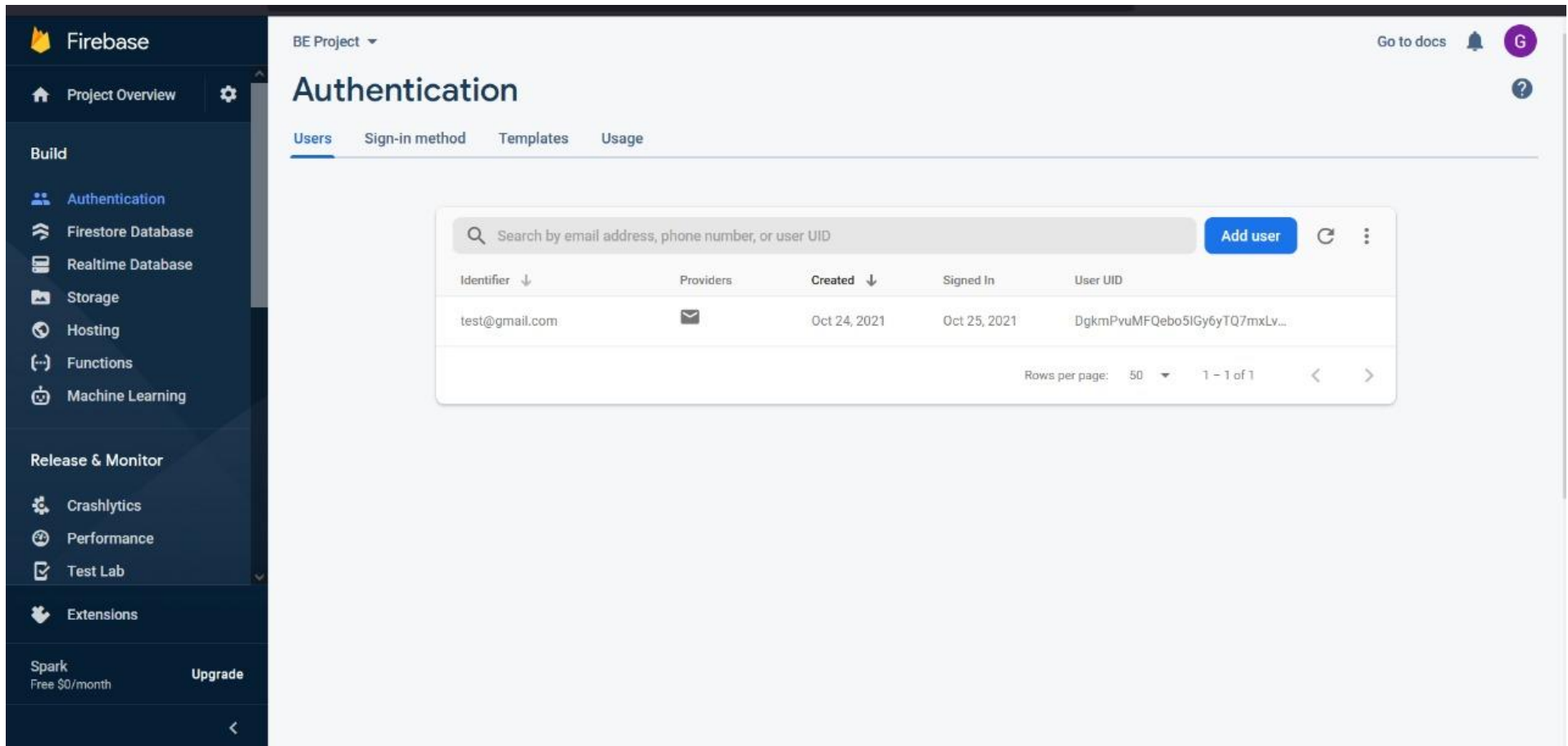
**Fig:App Flow**

# 8. Implementation



**Fig:App Database**

**Fig: Login Page**
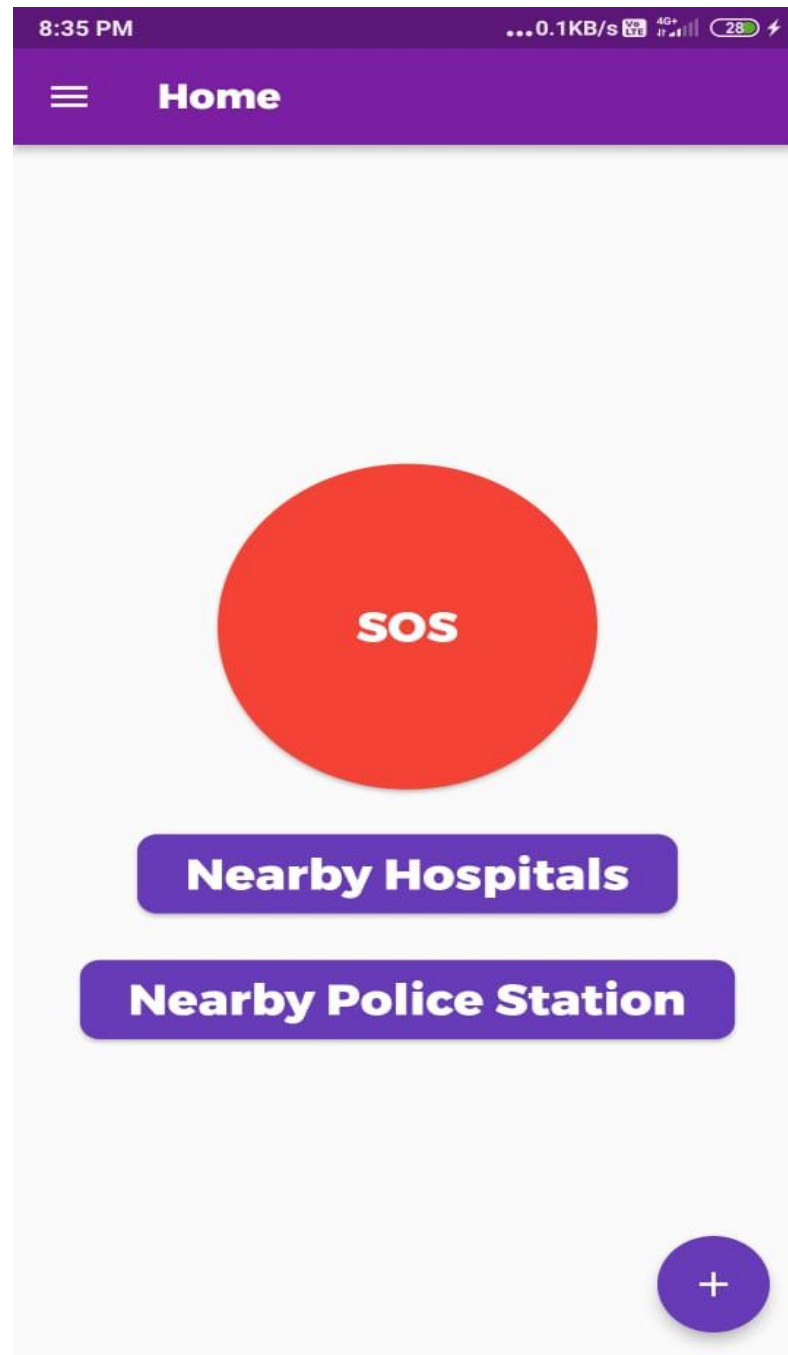
**Fig: Home Page**

**Fig: Speed Dial**

# 9. Status of Paper Draft & Targeted Conference

1. 4th International Conference on Computer Networks, Big Data and IoT ICCBI 2021
   - ➢ Paper Submission Deadline:        29 September, 2021
   - ➢ http://icocbi.com/2021/index.html
1. ICICV 2022 : 4th International Conference on Intelligent Communication Technologies and Virtual Mobile Networks
   - ➢ Submission Deadline                  Tuesday 05 Oct 2021
   - ➢ Conference Dates                     Feb 10, 2022 - Feb 11, 2022
   - ➢ http://icicv.org/2022/
1. IEEE International Conference on Computing, Communication & Internet of Things Sri Sai Ram Engineering College Chennai, India, March 10-11, 2022
   - ➢ Abstract registration deadline    December 1, 2021
   - ➢ Submission deadline                  December 20, 2021
   - ➢ https://www.ieeeic3iot2022.org/ic3iot-2022

# Thank You...!!